AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An optical encoder disk comprising:

a disk;

a first region on said disk, wherein said first region increases continuously in size in a radial direction from a minimum at a first angular position to a maximum that is 360 degrees from said first angular position, said first region defined by a circular first boundary and a second boundary that is continuous from said minimum to said maximum; ~~and~~

a second region on said disk adjacent to and encompassing said first region, wherein one of said first and second regions allows a greater amount of light to be transmitted therethrough than the other of said first and second regions;

a circular-shaped third region encompassed by said first region, wherein one of said first and third regions allows a greater amount of light to be transmitted therethrough than the other of said first and third regions; and

a ring-shaped fourth region encompassing said second region, wherein one of said second and fourth regions allows a greater amount of light to be transmitted therethrough than the other of said second and fourth regions;

wherein light transmitted through said first and second regions produces a first electrical output, light transmitted through said first and third regions produces a second electrical output, and light transmitted through said second and fourth regions produces a third electrical output, wherein said second and third outputs are reference outputs used to adjust said first output, and wherein said first, second and third outputs are used to determine an angular position of said disk.

2-4. (Canceled).

5. (Currently Amended) The optical encoder disk of Claim 1 [[3]] further comprising:

a fifth region on said disk encompassing said second region; and

a sixth region on said disk encompassing said fifth region, wherein said fifth region increases continuously in size in a radial direction from a minimum at a second angular position to a maximum that is 360 degrees from said second angular position, and wherein one of said fifth and sixth regions allows a greater amount of light to be transmitted therethrough than the other of said fifth and sixth regions, said fifth and sixth regions out of phase with said first and second regions.

6. (Original) The optical encoder disk of Claim 5 wherein said first angular position and said second angular position are different.

7. (Original) The optical encoder disk of Claim 5 further comprising a seventh region that extends partially around said disk, said seventh region in a position that traverses said minimum and maximum of said first region, wherein said seventh region prevents light from being transmitted therethrough.

8. (Original) The optical encoder disk of Claim 5 further comprising a seventh region that extends partially around said disk, said seventh region in a position that traverses said minimum and maximum of said fifth region, wherein said seventh region prevents light from being transmitted therethrough.

9. (Canceled).

10. (Currently Amended) An optical encoder comprising:

a light source;

~~a light-sensitive detector; and~~

a code disk positioned between said light source and a light-sensitive ~~said~~ detector, said code disk comprising:

a first region and a second region adjacent to said first region, wherein said first region increases continuously in size in proportion to angular disk position over a 360-degree arc, wherein said first region is defined by a circular first boundary and a second boundary that is continuous over said 360-degree arc, wherein one of said first and second regions allows light to be transmitted to said detector and the other of said first and second regions prevents light from being transmitted to said detector, and wherein movement of said encoder disk relative to said detector exposes a different amount of said detector to light;

a circular-shaped third region encompassed by said first region, said third region having a constant outer radius, wherein one of said first and third regions allows light to be transmitted to said detector and the other of said first and third regions prevents light from being transmitted to said detector; and

a ring-shaped fourth region encompassing said second region, said fourth region having a constant inner radius, wherein one of said second and fourth regions allows light to be transmitted to said detector and the other of said second and fourth regions prevents light from being transmitted to said detector;

wherein said detector comprises a first photodiode that straddles said first and second regions, a second photodiode that straddles said first and third regions, and a third photodiode that straddles said second and fourth regions, wherein said

outer radius of said third region is dimensioned such that the outputs of said third and second photodiodes are equal at a first angular position to provide a first reference output, wherein said inner radius of said fourth region is dimensioned such that the outputs of said first and second photodiodes are equal at a second angular position to provide a second reference output, and wherein said first and second reference outputs are used with an output of said first photodiode to determine an angular position of said disk.

11. (Original) The optical encoder of Claim 10 wherein said second region encompasses said first region.

12. (Original) The optical encoder of Claim 10 further comprising an electronic circuit coupled to said detector, said electronic circuit converting an output of said detector into a digital signal.

13-14. (Canceled).

15. (Currently Amended) The optical encoder of Claim 10 [[13]] wherein said code disk further comprises:

a fifth region encompassing said second region; and

a sixth region encompassing said fifth region, wherein the area of said first region increases continuously in size in proportion to angular disk position over a 360-degree arc, and wherein one of said fifth and sixth regions allows light to be transmitted to said detector and the other of said fifth and sixth regions prevents light from being transmitted to said detector, said fifth and sixth regions out of phase with said first and second regions.

16. (Original) The optical encoder of Claim 15 wherein said first and second regions are 180 degrees out of phase with respect to said fifth and sixth regions.

17. (Original) The optical encoder of Claim 15 wherein said code disk further comprises a seventh region that extends partially around said code disk, said seventh region in a position that traverses the minimum and maximum of said first region, wherein said seventh region prevents light from being to said detector.

18. (Original) The optical encoder of Claim 15 wherein said code disk further comprises a seventh region that extends partially around said code disk, said seventh region in a position that traverses the minimum and maximum of said fifth region, wherein said seventh region prevents light from being transmitted to said detector.

19. (Currently Amended) The optical encoder of Claim 15 wherein said detector further comprises ~~a first photodiode that receives light transmitted that is through said first and second regions, a second photodiode that receives light that is transmitted through said first and third regions, a third photodiode that receives light that is transmitted through said second and fourth regions,~~ a fourth photodiode that receives light that is transmitted through said fifth and sixth regions, and a fifth photodiode that receives light that is transmitted through a seventh region that extends partially around said code disk.